AP Stat- Ch. 2 In-class review problem NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Below is data on the years of education versus the years spent in jail by a sample of 20 – 40 year old men. *For this question, round all numbers to3 decimal places.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Education (Yrs)** | **Jail Time (Yrs)** |  | **Education (Yrs)** | **Jail Time (Yrs)** |
| 24 | 0 |  | 10 | 5.2 |
| 20 | 2.1 |  | 28 | 0.1 |
| 12 | 5.2 |  | 5 | 8.7 |
| 13 | 3.6 |  | 8 | 8.9 |
| 20 | 0.5 |  | 9 | 7.6 |
| 21 | 1 |  | 12 | 2.3 |
| 10 | 2.2 |  | 14 | 4.5 |
| 6 | 6.5 |  | 15 | 2.1 |
| 8 | 7 |  | 17 | 1.3 |
| 10 | 4 |  | 21 | 0.4 |
| 16 | 2.5 |  | 23 | 0.9 |
| 18 | 1.6 |  | 7 | 9.1 |

1. Determine the explanatory and response variables
2. Sketch a scatterplot of the data. Describe the scatterplot.
3. Find the equation of the LSR line and the correlation coefficient. Sketch the LSR line on your scatterplot from (a).
4. Use the model to predict the number of years in jail for someone with 18 years of education.
5. Calculate the residual for the prediction in part (d)
6. Is this prediction an overestimate or an underestimate? Why?
7. Interpret the slope of the LSR line in a complete sentence.
8. **Given that** a person has spent 5 years in jail, how many years of education would you predict they have had? (SHOW WORK)
9. Sketch the residual plot.
10. What does the residual plot in part (i) tell us about our linear model? Justify.
11. Find the coefficient of determination and interpret it.
12. What percent of jail time is due to factors OTHER than years of education?
13. List some of these other factors that affect jail time (other than years of education). In other words, list some confounding/lurking variables in this situation.